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THE UNIVERSITY OF ALBERTA
AN EXAMINATION OF THE APPLICATION OF
PLANNING-PROGRAMMING-BUDGETING
TO THE HEALTH CARE FIELD

by



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A THESIS
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ABSTRACT

The growth in the relative size and complexity of the public sector of the economy during the last two decades has made policy-makers aware of an increasing need for improved methods of allocating resources. Recognition of this need has led to the development of a system designed to make as explicit as possible, relevant information on which to base public policy. This system is known as Planning-Programming - Budgeting.

The main objective of this thesis is to examine the application of Planning-Programming-Budgeting to the health care field. This examination compares and contrasts the "traditional" budgetary process and the Planning-Programming-Budgeting System. It also suggests a program structure for health services at the provincial government level and at the hospital level.

The basic conclusions of this thesis are:

(1) that the "traditional" budgetary process has serious dysfunctions and limitations as a management aid in resource allocation decisions;

(2) that the Planning-Programming-Budgeting System possesses characteristics which would assist decision-makers substantially in making choices. It is suggested that this assistance would provide decision-makers with a systematic analysis of program

objectives, costs, benefits and alternatives; thus it would be advantageous to incorporate the "system" into the health portion of the public sector.

I would like to express my sincere appreciation to Professor R.D.A. Viner for his assistance and valuable suggestions concerning this thesis.

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CHAPTER I

INTRODUCTION

. . . we cannot afford the luxury of not using limited resources as effectively as possible to meet personal and collective goals, however these goals are defined and ordered.¹

Canada is a mixed economy in which both the public and private institutions exercise economic control and influence. As with most modern welfare states, there has been a marked growth in the relative size of the public sector. Between 1949 and 1965, total expenditures of all governments in Canada increased from 23.1 percent to 30.9 percent of the Gross National Product (G.N.P.). In 1968 it was estimated to represent 35.1 percent and projections to 1981 place the figure at 40 percent (based on 1969 dollars).²

Contributing to this proportional shift from the private to public sector, have been various political and social forces. As a result of these forces governments have established new programs shifting the costs from private to public responsibility; for example, hospitalization and medical care plans.

In addition to the establishment of new programs, there

¹Canada, Economic Council of Canada, Seventh Annual Review, Patterns of Growth, (Queen's Printer, September 1970), p. 2.

²Canada, Department of Health and Welfare, Task Force Reports on the Cost of Health Services in Canada, Vol. III, 1969, pp. 419-49.

has been a general growth in the size of the public programs, particularly, in health services. Since 1950 expenditures on health care by all levels of government have expanded at the rate of 14 percent per year.³ It is estimated that by 1975, total expenditures on personal health care will reach 6.5 percent of the projected G.N.P., compared to 5.5 percent in 1969.

This increase may be attributed to many factors. Two of these factors are:

- (1) Advanced technology in health services has produced treatments for illnesses which were not previously available; and some have a high per unit cost.
- (2) Increased wages and salaries in a labor-intensive industry.

The absence of the price mechanism and of competitive forces in public services subject them to decision-making based on a purely "need" approach with little attention paid to costs and benefits. As a result, serious questions are now being asked regarding the efficiency of resource allocation and public expenditures in all public programs, and particularly in the health sector.

In Canada, during the past ten years, concern has mounted regarding the cost of health care. In the early 1960's the Federal Government established the Royal Commission on Health Services. This Commission was largely concerned with assessing the supply

³Canada, Economic Council, op. cit., p. 40.

of health services and the estimated demand; however, it did mention the need for better guidelines on resource allocation.

Pressures and special interests should not be allowed to determine the allocation of resources to specific diseases.⁴

In 1968 the Federal Government established the Task Forces on the Cost of Health Services. These reports strongly supported better coordination and efficiency within the health delivery system. In 1970, the Report of the Ontario Committee on the Healing Arts reflected equal concern about the economic aspects of health care.

In a world of almost infinite human desires and only limited resources available to meet alternative needs, economy and efficiency are essential to the health care system.⁵

Similar concern has been expressed by governments in the United States and various other countries.

The determination of the total quantity of resources spent on any public good, including health services, must ultimately be the responsibility of elected government officials in a democratic society. The dilemma of the policy-maker is the allocation of a finite amount of resources, because the size of the public sector is increasing, and there is a relative scarcity of resources.

⁴Canada, Royal Commission on Health Services, (Queen's Printer, 1964), Vol. I, p. 516.

⁵Ontario, Report of the Committee on the Healing Arts, (Queen's Printer, 1970), Vol. I, p. 11.

Governments are gradually incorporating a technique known as Planning-Programming-Budgeting Systems (PPBS) into their administrative framework to assist in this allocation process and to provide information so that rational decisions are encouraged.

This concept has gained wide acceptance in the United States and has been adopted by the Canadian Federal Government. Its application will likely spread to other levels of government and institutions who are confronted with making resource allocation decisions and attempting to maximize net socio-economic benefits and minimize cost.

Purpose

The purpose of this thesis is to examine the applicability of a Planning-Programming-Budgeting System in health services and to set forth a possible program structure which could be used at the provincial level and at the hospital level.

It is suggested that an examination of this nature will contribute to the health field, as a general knowledge of the concept will be required by all practicing health service administrators within a few years.

Format of Thesis

The thesis is divided into six chapters. Chapter I consists of the introduction and purpose. Chapter II provides a general overview of the traditional budgeting process in the public sector. Chapter III describes the conceptual framework

of the Planning-Programming-Budgeting System and its historical development. Chapter IV outlines the principles of cost-benefit analysis and cost-effectiveness analysis used in the analytical process of a Planning-Programming-Budgeting System. Chapter V presents a proposed program format for a provincial department of health and a general acute hospital. Chapter VI, the final chapter, gives a summary of the limitations of the traditional budgeting system, functional aspects, limitations, and problems of the Planning-Programming-Budgeting System, observations, and conclusions.

CHAPTER II

TRADITIONAL BUDGETING IN THE PUBLIC SECTOR

Hartley emphasizes that there is a distinct difference between the "budget" and the "budgetary process." The budget being a legal document outlining the financial plan of the organization and the budgetary process being:

. . . the continuous affair that includes planning, development of document, presentation to the approving authority, formal adoption, implementation, fiscal administration and appraisal.¹

Many authorities and authors use these terms as if they were synonymous; however, they are quite different and an appreciation of their connotations is necessary to understand the field of resource allocation.

The Conventional Budget

The conventional budget is an outline of a financial plan covering a given future time period, usually one year. Through the mechanism of the budget, relatively scarce resources are distributed to support certain programs, in order to reach some given goal. It lists the various objects of expenditure such as salaries, travel, and supplies, and itemizes each with the last year's actual

¹Harry J. Hartley, Educational Planning-Programming-Budgeting, A Systems Approach, (Prentice-Hall, 1968), pp. 138-39.

expenditure, the current year's projected expenditure, and the next year's estimated expenditure. The incremental change may also appear in dollars and percentage for each item.

The budget is a list of fairly well defined inputs mixed in various proportions to produce an output or reach an objective. It is probably the most valuable tool used by management to assist in the decision-making process. Anshen states, ". . . it [the budget] organizes, influences, facilitates, and expresses management thought and management action."²

The budget becomes the basis of audit, control and accountability for the handling of the public monies. During the period of time for which the budget exists it is used by management to assess the pattern of expenditures and make decisions to correct deviations. This control is useful to management in striving to achieve the objectives of the organization. The budget also fixes responsibility to members of the organization to ensure that the funds are spent only on the objects or items approved.³

The present budget is used to:

- (1) Plan the finances for the coming year to arrive at a given objective.

²Melvin Anshen, "The Federal Budget As An Instrument For Management And Analysis," in David Novick, (ed) Program Budgeting, (Holt-Rinehart, 2nd ed., 1969), p. 3.

³Charles L. Schultze, The Politics and Economics of Public Spending, (The Brookings Institution, Washington, 1968), p. 5. .

- (2) Fix responsibility on management officials, thus assuring a degree of control.
- (3) To indicate when corrective action is required.

These functions generally fall into the categories of planning, management, and control.⁴

The planning involves the determination of objectives, and the examination of alternative ways of reaching the objective. Management refers to the carrying out of certain tasks to reach the objective, to making decisions on the various alternatives available, and to taking corrective action during the operational phase to ensure that the objectives are met. Control concerns the fixing of responsibility by limiting expenditures and by various restrictions, in an attempt to prevent funds from being over-spent or spent on items not authorized.

Another author alludes to these functions in listing the advantages of the budget:

- (1) Budgeting, by formalizing their responsibilities for planning, compels managers to think ahead.
- (2) Budgeting provides definite expectations that are the best framework for judging subsequent performance.
- (3) Budgeting aids managers in coordinating their efforts, so that the objectives of the organization as a whole harmonize with the objectives of its parts.⁵

⁴Allen Schick, "The Road to PPB: The Stages of Budget Reform," in Fremont J. Lyden & Ernest G. Miller (eds), Planning Programming, Budgeting: A Systems Approach to Management, (Markham Publishing Co., 1970), pp. 28-29.

⁵Charles Horngren, Accounting for Management Control: An Introduction, (Prentice-Hall, 2nd ed., 1970), p. 188.

It would appear that the conventional budget carries out all of these functions to varying degrees; however, the control aspect has historically had greater emphasis. Little attention has been focused on the budget as a planning-management tool. If a rational allocation of resources is to occur, there must be more use made of the present budget or alterations made in its structure to facilitate its use as a planning and management tool.

The present budget is orientated toward negative control. Its main objective is to prevent funds from being spent for unauthorized purposes and to prevent over-expenditure.⁶ There is very little positive control, whereby the budget explicitly demonstrates why funds are being spent.

Budget Scope

The present budget is a listing of objects of expenditure by department. Although the size of a department may vary from a nursing ward in a hospital, to a total department of health, there is no mechanism to coordinate the various units. The budget is unit and departmental orientated rather than being purpose and goal orientated. Thus, as a management tool to assist in choosing between alternatives and preventing duplication or waste of resources, it has limited utility.

⁶Canada, Public Service Commission, Bureau of Staff Development, Fiscal & Budgetary Theory, (May, 1970). (Mimeographed)

Although the present budget has many functions, it also has several dysfunctions and limitations. It is really a tool for controllers rather than for managers, because of its emphasis on control rather than on planning and the attainment of objectives.

The Budgeting Procedure

Government Sector

An integral part of the total budgetary process is the actual procedure which is used in the preparation, development, presentation, and approval of the document. The following is a general overview of the procedure which is used to allocate resources in the public sector.

Since this thesis is primarily concerned with the health "portion" of the public sector, and particularly the hospital section of the health program, the outline will deal with this aspect. The Federal Government will be excluded since the provincial governments have the primary responsibility for provision of health services.⁷

It must be emphasized that the following procedure is

⁷In 1968 the estimated total expenditure for all health services by the Federal Government was \$836 million which represented 20% of the total expenditure. The total Provincial Government's share was \$1830 million or 45% of all expenditures on health. Therefore, the Federal Government spends less than one-half as much on health services as does all the provinces. (Source: Canada, Department of National Health & Welfare, Task Force Reports on the Cost of Health Services in Canada, Vol. 3, Table C-7, pp. 403-404.)

general in nature and is not intended to be detailed. Variations from province to province, agency to agency, and hospital to hospital will occur; however, these variations in relation to dates, steps, and flow, should not detract from the significance or accuracy of the overall view.

At any given time of the operating cycle, government departments and hospitals are involved in the budgetary process. For the purpose of this discussion it will be assumed that the cycle begins with the start of a new fiscal year -- April 1st.

After receiving parliamentary approval, the budget becomes effective on the first day of the new fiscal year. During April and May analysis of expenditures and projections of future revenues are made and in June the Treasury Board issues guidelines to the Budget Bureau. These guidelines are used by the Budget Bureau and government departments in preparing their budget for the next fiscal year. Thus, recommendations concerning the next budget period are being forwarded ten months prior to the period. These guidelines are based on economic projections by civil servants as well as political factors brought forward by the politicians.

The government departments submit their next year's budget to the Budget Bureau in October. The format of the budget is by "object of expenditure" for each division, i.e., salaries, supplies. The Deputy Minister responsible for that department goes before officials of the Budget Bureau and Treasury Board to defend

the requests. The decision reached at this meeting is relatively definitive; however, final approval of the government budget is received in the legislature in February.

A critical part of the resource allocation process is the meeting of the various department officials. In some cases a considerable amount of bargaining and negotiation may occur while in other cases the total resource allocation may be made unilaterally by the Treasury Board.

The following are some of the factors considered by the Treasury Board in allocating resources to the health field:

- (1) The volume and urgency of the requests for the various government programs.
- (2) The validity of the arguments put forward by each department in support of their programs.
- (3) Cost trends of items required to be purchased under the various programs.
- (4) The amount that was approved by Treasury Board for programs in the current fiscal year.
- (5) Prospects for provincial revenues.^{8,9}

In addition, political and social factors considered to be important by the politician will be reflected in this allotment.

⁸Saskatchewan, Department of Public Health, Hospitals Branch, The Hospital Dollar, (October, 1966), p. 5. (Mimeographed)

⁹The document referred to in Footnote 8, further states that the Treasury Board may authorize an overall increase of 5% for hospital services over the amount approved for the current year.

The Hospital Sub-Sector

In the hospital the budget may be prepared by each department head and submitted to the accounting office for correlation, or it may be prepared entirely by the accounting staff. When the budget is compiled it is reviewed by senior administrative officials who will meet with each department head to discuss major changes. During September or October the budget will go before the Board of Governors for approval, and then to the Hospital Division of the provincial government.¹⁰ The budget cycle in most hospitals corresponds to the calendar year rather than the fiscal year.

The hospital budget is reviewed by the accounting personnel of the Hospital Division. In arriving at an approved total budget for the coming year the following selected factors are given consideration:

- (1) Percentage increase over last year's budget.
- (2) Population served.
- (3) Age-sex distribution of population.
- (4) Average length of stay.
- (5) Number of patient-days from previous year.
- (6) Average daily census.
- (7) Type and size of hospital

¹⁰This may be a division of the Department of Public Health or a separate "commission" or "crown corporation" which receives its funds from the government for distribution to the hospitals.

- (8) Number of nursing hours per patient-day requested.^{11,12}

The hospital is notified in late December as to the decision of the paying agency. If the hospital is not satisfied with this decision, its officials may request meetings with the government officials and/or the Minister of Health to lobby and negotiate for additional funds.¹³

In Saskatchewan the Hospital Branch has tried various methods of resource allocation during the twenty-three year history of the hospitalization plan. It has had line-item approval of budgets, global budgets and in 1970 it had both systems in operation.

This has been a brief overview of the procedure of allo-

¹¹These factors are based on personal interviews with officials of the governments of Alberta, Saskatchewan, and New Brunswick. The list is not exhaustive.

¹²Saskatchewan, Department of Public Health, Hospital Services Plan, Annual Report, (1968), pp. 32-34.

¹³The procedures vary in certain provinces. In Alberta prior to 1970, hospitals did not submit a budget for the up-coming year. The resources were allocated each year using the previous year's experience, plus an adjustment based on various crude indices of measurement (e.g., average length of stay). This is still the practice in all hospitals except the four provincially owned institutions. In 1970 these four hospitals submitted a detailed line-item budget for the current year. They were allotted a "global" amount to be spent at the discretion of the management for various mixes of inputs. This is referred to as "global budgeting." The criteria used in arriving at this figure is difficult to ascertain; however, it appears that recommendations were made by the Hospital Branch after analysis of the inputs and indices of workload. Concerning the budget for one hospital, an official of the government said, ". . . the final figure was arrived at in the Minister's office, and passed down to us. . . ."

cating resources in the public sector and specifically the hospital sector. The following section will contain an examination of the characteristics of the budgetary process.

Characteristics of the Budgetary and
Decision-Making Process

Wildavsky suggests that the size and content of a given year's budget depends more on last year's size and content than on any other basis. This concept, he refers to as incrementalism, is displayed explicitly in today's budgetary process.¹⁴ Items in the budget approved during prior years are usually not challenged. Commitments made for programs during previous years must be maintained. Rather than every item of expenditure being evaluated as to its total relative benefit and cost, only the requests for basic increases are evaluated each year. To account for the general increase in the cost of inputs, the approving authorities may grant a five or six percent increase on the aggregate budget. This procedure allows little evaluation of the outputs or purposes for which the resources are being committed. In fact, a program with little or no benefit to society receives the same allotment as a program providing relatively large benefits.

As in many decision-making situations, allocation of resources involves bargaining between the various parties to the

¹⁴ Aaron Wildavsky, The Politics of the Budgetary Process, (Little, Brown & Co., 1964), pp. 13-15.

decision. This bargaining may be implicit or explicit. McKean refers to this as the "unseen hand in government."¹⁵

Implicitly the bargaining mechanism may take the form of "padding" the budget. The manager must make a decision on how much to request in his budget and what the best tactic is to assure success. Most managers tend to seek an increase in the resources being allocated to their department. There is a certain reward in status to have a large growing department. This phenomenon may be referred to as "utility maximization."¹⁶ When a manager pads his department's budget it must be done with caution. If he becomes known as one who uses this tactic he may lose more than he gains; however, if done skillfully, he may increase the size of present programs and create new programs, thus achieving his goal.¹⁷

Spending the total allotment is also part of this bargaining process. If a department or agency shows a surplus at the end of the budget year, the granting authority may cut back its "base-line" the next year. This encourages administrators to keep personnel positions filled, and to spend total allotments for other inputs. An increase in the rate of spending may occur near the end of the year if a surplus is projected.

¹⁵ Roland N. McKean, Public Spending, (McGraw-Hill, 1968), p. 21.

¹⁶ Ibid., pp. 11-13.

¹⁷ Wildavsky, op. cit., p. 23.

Explicit bargaining is also a very important characteristic of the budgetary process. This is an accepted technique and the administrators who can bargain most effectively will usually receive the largest allocation of resources. The manner of budget presentation, validity of the arguments, status of the individuals concerned, ideology of the political party in office, strength of the pressure groups, are but a few of the factors influencing the bargaining process.

With bargaining comes a degree of compromising from both parties, and this leads to a satisficing solution.¹⁸

The bargaining process in the health sector tends to confuse issues and officials become entangled in emotion-charged terms such as "need," "essential," "minimum standards of care." What is the meaning of these words? Are these words interpreted similarly by everyone using them?¹⁹

At the other end of the continuum is the word "cost." Governments may set a ceiling on the cost for certain departments, beyond which they will not allocate additional resources. This

¹⁸This concept is similar to Herbert Simon's theory that managers must make decisions which satisfice rather than maximize, due to the many constraints on the decision-maker. Refer to March & Simon, Organizations, (New York: Wiley, 1958), pp. 140-41.

¹⁹For one interpretation of the various kinds of "needs" --true need, perceived need, provoked need, and unmet need--refer to Canada, Department of National Health & Welfare, Task Force Reports, op. cit., p. 11.

was mentioned in the discussion on incrementalism. It is referred to as the fixed-ceiling budgetary process, while the practice of only looking at need could be referred to as the open-ended budgetary process.²⁰ These two approaches to justifying resource allocation have also been referred to as "need-firsters" and "budget-firsters."²¹

Resources cannot be rationally allocated on the basis of need alone or cost alone. Hitch and McKean emphasized this when they wrote "There is no budget size or cost that is correct regardless of the pay off, and there is no need that should be met regardless of cost."²²

President Eisenhower reiterated this when he was referring to the Defense Department,

Words like "essential" and "indispensible" and "absolute minimum" become a common coin of the realm . . . and they are spent with wild abandon. One military man will argue hotly for a given number of aircraft as the "absolute minimum" and others will earnestly advocate the "indispensible" needs for ships or tanks . . . all totaled in numbers that are always called "minimum." All such views are argued with vigor and tenacity. But obviously all cannot be right.²³

²⁰Verne B. Lewis, "Toward a Theory of Budgeting," in Fremont J. Lyden & Ernest G. Miller (eds), op. cit., pp. 130-32.

²¹Hitch & McKean, The Economics of Defense in the Nuclear Age, (Atheneum Publishers, 1960), pp. 46-48.

²²Ibid., p. 47.

²³Ibid., p. 48.

Government officials are increasingly concerned about the cost of health care and its size in relation to the total Gross National Product (G.N.P.).²⁴ There are no clear-cut minimum needs in the public sector (particularly in the health sector) and there is no right answer as to the percentage of the G.N.P. that should be devoted to health services. It is clear that there is a finite amount of resources which can be devoted to health; this would be something less than the total G.N.P.; however, the ideal percentage is not known. Therefore, health expenditures theoretically could range from "zero" to somewhat close to the total G.N.P. The expenditures for various programs can be increased or decreased depending on the decisions reached in the bargaining process.

Should we be "need-firsters" or "budget-firsters?" Would it not be more realistic to examine the benefits and costs of the various alternatives? Rather than trying to seek the answer as to the right amount to spend on health services, we should be looking at the increased need in health relative to other public services.

Another characteristic of the budgetary process is its short time-horizon. It takes into account only those expenditures affecting the current budget year. Many new programs are started by the foot-in-the-door tactic, by showing only the current year's expenditure rather than an expenditure projection for five or ten

²⁴The contribution of all three levels of government to the total expenditure for all health services grew from an estimated 1.62% of the G.N.P. in 1955, to 4.18% of the G.N.P. in 1968. Source: Task Force Reports, Vol. 3, op. cit., Table C-9, p. 405.

years. This permits programs that have small relative benefits to commence because of the lack of examination of the total cost implications. If the planning function of the budgetary process was being adequately executed, this tactic would be minimized.

The present budgetary process is also fragmented. This is demonstrated in the hospital field with hospitals expending resources on similar programs with little or no concern about duplication and waste. Fragmentation prevents decision-makers from adequately examining alternatives in relation to costs and benefits. This results in situations such as hospitals duplicating equipment, and causing under-utilization of the asset.

In an attempt to describe the budgetary process the characteristics which appear to have an important impact on resource allocation have been mentioned. These characteristics may not be exhaustive, but hopefully they represent the important ones.

With the realization of the weaknesses of the traditional budget and budgetary process; with increasing public concern for greater public services; and with the increase in complexity of the public sector, research was carried out on techniques to improve resource allocation. Budget reform has been evolving over the last sixty years with the development of techniques which may help the decision-maker in his ever-complex task. These techniques will be the subject of the next two chapters.

CHAPTER III

PLANNING-PROGRAMMING-BUDGETING SYSTEM (PPBS)

In the previous chapter the functions and dysfunctions of the traditional budgeting system were examined. Due to concern about these dysfunctions, organizations in both the public and private sectors have been involved in budgetary reform. This reform has resulted in the development of a technique which places greater emphasis on the planning component of the budgetary process. The concept purports to possess the ability to be of greater assistance to the decision-maker in allocating resources than the traditional budget. The technique is referred to as Program Budgeting or a Planning-Programming-Budgeting System. In the following discussion the development and conceptual framework of this system will be examined.

Historical Development

The concept of the program budget has evolved over the last fifty years, due to the efforts of many individuals concerned with budget reform. As early as 1907, the New York Bureau of Municipal Research recommended a revolutionary concept of budget classifications, i.e., by function, by work program, and by objects of expenditure.¹

¹Charles L. Schultze, The Politics and Economics of Public Spending, (The Brookings Institution, 1968), p. 9.

In 1911, United States President Taft appointed a Commission on Economy and Efficiency. The report of this commission denounced line-item appropriations in favor of a classification similar to the one recommended by the New York Bureau of Municipal Research.²

Around 1924 studies were being carried out in the General Motors Corporation and later in the Dupont Company which culminated in objective-oriented budgeting.³

During the next twenty-five years many departments in the United States Government were doing pioneering work on what was then termed the "financial project" which came to be known as program budgeting.⁴

In 1949 the first Hoover Commission recommended the replacement of budgeting of objects of expenditure with "performance budgeting." The Commission recommended that,

. . . the whole budgetary concept of the Federal Government should be refashioned by the adoption of a budget based upon functions, activities, and projects; this we designate a 'performance budget.'⁵

²Ibid., p. 10.

³Charles Christenson, Program Budgeting, Graduate School of Business Administration, Harvard University, pp. 2-3. (Mimeographed)

⁴Eugene R. Elkins, Program Budgeting, Bureau for Government Research, West Virginia University, 1955, pp. 2-3.

⁵Arthur Smithies, The Budgetary Process in the United States, (McGraw-Hill, 1955), p. 83.

As the name indicates, the performance budget was primarily aimed at improving efficiency. Work units were designated and work measurement programs were inaugurated. In 1950 the Budget and Accounting Procedures Act was passed specifying improvements in the area of cost accounting.

Although there was the underlying concern regarding the efficient use of resources, the major criteria during these years of budgetary reform was to accept the objectives as given, and to achieve them as efficiently as possible. This has evolved into the concept known today as cost-effectiveness theory.

Frank and Lillian Gilbreth's research in work measurement and motion study and Fredrick W. Taylor's theory of scientific management contributed to the field of budgetary reform. These theories and techniques were used in the performance budget in an attempt to improve efficiency. Later, more advanced techniques such as operations research were developed. While the definition of these terms can be confusing, one author suggests they involve,

. . . the continuous cycle of defining . . . objectives, designing alternative systems . . . evaluating these alternatives in terms of their effectiveness and cost, questioning the objectives and the other assumptions underlying the analysis, opening new alternatives, and establishing new . . . objectives.⁶

The advances in "systems" technology contributed to the

⁶Charles J. Hitch, "Plans, Programs and Budgets in the Department of Defense," Operations Research, (Jan/Feb., 1963), p. 8.

next round of budget improvements. This stage of budget reform was concerned with planning, programming and budgeting systems, which emphasized specification of objectives, selection of alternative programs and evaluation of costs and benefits.⁷

In 1954, the Rand Corporation issued a report suggesting a new method for allocating resources in the military field.⁸ In this report "program" meant an integrated planning-programming-budgeting process. The research carried out at the Rand Corporation provided the basis for applying program budgeting to the United States Department of Defense in 1961.⁹

In 1965 President Johnson issued Bulletin No. 66-3, directing that a formal Planning-Programming-Budgeting System be applied to an extensive list of government agencies and departments.

The Canadian Government carried out several studies on the financial administration of public monies prior to October 1967 when it was announced by the Minister of Finance, Mr. Edgar Benson, that program budgeting would be applied to the Federal

⁷Schultze, op. cit., p. 14.

⁸David Novick, Efficiency and Economy in Government (The Rand Corporation). Also see Novick, Which Program Do We Mean in Program Budgeting? (Santa Monica, California, The Rand Corporation, May 12, 1954).

⁹Robert S. McNamara, Secretary of Defense is credited with initiating program budgeting in the Department of Defense. The publication of the book, Hitch & McKean, The Economics of Defense in the Nuclear Age, (Cambridge: Harvard Press, 1960), provided impetus and assistance to this application.

Government.¹⁰ In 1970 the "Blue Book" of estimates appeared in program format for the first time.

In several provincial governments, advancements have also occurred in the application of program budgeting, though at a slower rate than in the Federal Government.¹¹ It is anticipated that within a few years all provincial governments will be involved in program budgeting.

Conceptual Framework

The terms performance budget, program budget, and planning-programming-budgeting system have been used interchangeably in much of the literature. This has resulted in confusion of the concepts and their application. General definitions of these terms are provided below.

Performance Budgeting is concerned with efficiency and the achievement of objectives at the least expenditure of resources.¹²

Program Budgeting refers to budgets which emphasize categorizations by programs, activities, functions or sub-functions, rather than by

¹⁰ Canada, House of Commons, Hansard, October 10, 1967.

¹¹ Ontario has published a manual entitled Effective Management Through P.P.B.S., October 1969. Several other provinces are carrying out studies in the field of PPBS. In 1969 the Alberta Department of Education initiated program budgeting.

¹² Allen Schnick, "The Road to P.P.B.: The Stages of Budget Reform," in Fremont J. Lyden and Ernest G. Miller (eds), Planning Programming Budgeting, (Markham Publishing Co., 1970), pp. 38-42.

objects of expenditure such as salaries or supplies.¹³ Pure program budgeting does not provide for the systematic analysis of programs or a multi-year perspective of costs and outputs.¹⁴ A program budget does not directly assist in choosing among alternatives, for it shows only the cost of outputs of one specific set of choices. It does not present a comparison among alternative choices, which is the essence of program analysis. . . . Thus the program budget provides the link between the analysis and the budget.¹⁵

Planning-Programming-Budgeting System (PPBS) refers to the combination of a number of concepts, some of which include performance budgeting, program budgeting, benefit-cost analysis and multi-year planning. It is a broader, more comprehensive concept than either of the above.

Planning-Programming-Budgeting System (PPBS)

Planning-Programming-Budgeting is a system designed to assist managers in making limited resources yield the maximum

¹³Harry Hatry and John Cotton, Program Planning for State, County, City, (George Washington University, 1967), p. 16.

¹⁴United States, George Washington University, State-Local Finances Project, What is P.P.B.? (Jan, 1967), p. 2.

¹⁵Fred S. Hoffman, "Public Expenditure Analysis and the Institutions of the Executive Branch," in Robert H. Haveman and Julius Margolis, (eds), Public Expenditures and Policy Analysis, (Markham Publishing Company, 1970), p. 433.

results in terms of economic and social benefits. Since the supply of resources is relatively scarce compared to the overall demand, decisions must be made in the selection of alternatives. PPBS assists decision-makers by making as explicit as possible all costs and benefits of various alternatives as well as other ramifications resulting from each choice. PPBS does not make the decision--it only provides the information so that informed decisions can be made.

PPBS emphasizes the explicit identification of the organization's objectives. This aspect of management is a precondition to effective planning.

PPBS was designed as a process which would allow planning for longer than a twelve month period, thus future consequences of past and current decisions can be evaluated.

The important and distinctive characteristics of the Planning-Programming-Budgeting System are:¹⁶

- (1) It is output oriented. This forces management to identify the objectives they are attempting to reach and specify the output expected from each program.
- (2) It has an extended time-horizon. This focuses on the explicit implication of decisions on future years and prevents the short-sighted approach of the traditional one-year budget.

¹⁶Hatry & Cotton, op. cit., p. 15.

- (3) It includes all pertinent costs. The PPBS isolates as many items as possible which contribute explicitly or implicitly to a program's cost.
- (4) It systematically analyzes alternatives. The PPB System assists in preventing resource allocation from becoming totally incremental and forces management to consider other alternatives to achieving given goals. It makes all programs subject to scrutiny, challenge, and competition which may prevent the perpetuation of poor ones because of vested interests and tradition.

Components of a Planning-Programming-Budgeting System

The basic components of the Planning-Programming-Budgeting System are:

- (1) The program structure and statement of objectives.
- (2) The program analysis.
- (3) The multi-year program and financial plan.¹⁷

The Program Structure and Statement of Objectives

The first step performed in applying the concepts of PPBS is to identify explicitly the organization's objectives, as well as the objectives of each activity to which resources are allocated. When these statements of objectives are grouped into common classifications, which have similar outputs, the program structure is established. The program structure should group organizational activities in a way that facilitates comparison of the cost and

¹⁷United States, George Washington University, State-Local Finances Project, PPB Notes 1-8, June 1968, p. i.

effectiveness of alternative approaches to the objectives.¹⁸

Hartley defines a program as "an activity, mission, operation, or output of a specific agency or organization."¹⁹

Programs with closely related outputs are brought together in broad categories. In the government such a primary category may be "health." The program structure is a hierarchical listing of the programs, sub-programs, and activities.

The broad program categories are sub-divided into narrower units of activity. These sub-units may be referred to as sub-programs, activities, sub-activities, and elements. Some governments and organizations refer to the same level of activity by different terminology; however, in general the levels may be defined in the following manner:

- (1) Sub-program (secondary category) provides a substantive breakdown of program categories and contains program elements which produce similar outputs. This level may also be called activity.
- (2) Sub-sub-programs, sub-activity, or program element (tertiary level) are the basic units of the program structure and should produce clearly definable outputs.

A program structure may contain more than three or four levels in its hierarchy, depending on the characteristics of the

¹⁸United States, Bureau of the Budget, Bulletin No. 68-9, April 12, 1968, p. 3.

¹⁹Harry J. Hartley, Educational Planning-Programming-Budgeting, A Systems Approach, (Prentice-Hall, 1968), p. 85.

organization. The program structure serves several purposes:

- (1) It organizes information on outputs and costs in such a manner that program analysis is more easily carried out.
- (2) It forces management to go through the exercise of identifying the objectives, which in itself can provide management with valuable insights and perspectives.
- (3) It serves as a framework for decision-making by indicating the interrelationships between programs and their relative effectiveness.
- (4) It provides a basic network for information and reporting to assist management in the control of operations.
- (5) It may highlight possible alternatives and tradeoffs among resource needs which the conventional organizational breakdown would overlook.²⁰

The program structure will not necessarily follow the organization's bureaucratic structure. In order for the programs to reflect comprehensiveness the categories may have to cut across departmental boundaries. This does not mean that organizational changes are necessary, however each department must know the extent of their responsibility for each program.

The program structure which is agreed on for use in resource allocation may not be the same as the operating budget. When this occurs, a "crosswalk"²¹ between the two is developed

²⁰Government of Ontario, Treasury Board, Effective Management Through PPBS, (Oct. 1969), pp. 19-20, and U.S. Government, Joint Committee, The Analysis and Evaluation of Public Expenditures: The PPB System, (U.S. Government Printing Office, 1969), Vol. 2, Part IV, p. 617.

²¹The "crosswalk" refers to the relationship between the budget in program terms and the traditional or line-budget.

so that the operating budget decisions are compatible with the planning and policy-making phase of management.

When a multi-purpose program is encountered it may be classified under its major purpose with the minor purposes being omitted. In other cases a classification under all the purposes may be indicated if a reasonable allocation and division can be made.²² It is imperative to remember, when designing program structures, that there is no "perfect" structure, since many structures could apply to the same organization. Thus flexibility must be allowed so that changes can be made when experience deems it necessary.²³ Schultze emphasizes that several types and kinds of classifications may be necessary for different analytical purposes and that there is nothing "sacred" about one program structure.

Their [program classifications] main function is to emphasize that government programs have an output, and that they should be analysed and evaluated on the basis of how effectively and efficiently that output meets program objectives.²⁴

²²When multiple-purpose programs are encountered and cost allocation formulas cannot be developed, the program is usually placed with that grouping to which it seems to contribute most. When this is done, it will be identified under the other groupings as a "non-add" entry so that the program is not double-counted. Refer to: U.S., The George Washington University, State-Local Finances Project, PPB Note 5, (April, 1967), p. 13, for further discussion. Also refer to: Charles Horngren, Accounting for Management Control, An Introduction, (Prentice-Hall, 2nd ed., 1970), p.330, for a discussion on the problem of allocating "joint" costs and "separate" costs.

²³United States, The George Washington University, State-Local Finances Project, PPB Note 5, (April, 1967), p. 2.

²⁴Schulze, op. cit., p. 25.

The program structure must portray the alternatives and tradeoffs among the programs. They should be capable of being costed and to have their economic and social benefits listed.²⁵

When the process of defining the program structure has been completed, statements should be written clearly delineating the scope and content of each segment of the program structure.

The Program Analysis²⁶

This is probably the most important component of the PPB System. Each program in the program structure is analyzed as to its costs and implications.

Inclusive in the program analysis are the following steps:

- (1) Identification of objectives (may be done in drafting the program structure).
- (2) Explicit, systematic identification of alternate ways of reaching the objective.
- (3) Estimation of the total cost implications of each alternative.

(4) Estimation of the expected results of each alternative.²⁷

²⁵Ontario, Treasury Board, op. cit., p. 21.

²⁶In some literature this component of PPBS is sub-divided into three other components, the issue letter, the program memorandum (PM), and the special analytic study (SAS). Issue letters define the major programs which should receive analytical attention in the current year. The PM is a brief outline of the alternatives considered, the decisions made and the reasons for the various choices. Special analytic studies are studies which have been carried out and which may be the data on which the decisions in the program memoranda are based. In this discussion these elements are not considered separately, since they are really part of the general component or process of program analysis.

²⁷Hatry & Cotton, op. cit., p. 15.

The analytical process may take several forms, and various levels of sophisticated techniques may be used. Hatry and Cotton distinguish two levels: the less rigorous analysis and the in-depth analysis.²⁸

In the less rigorous form of analysis the manager considers five factors:

- (1) The objectives
- (2) The alternatives
- (3) The costs and benefits of each alternative
- (4) The assumptions and uncertainties associated with each alternative
- (5) The impact of each alternative on other programs, and/or organizations.

It is not always necessary to study questions with sophisticated techniques in order to achieve beneficial results. Managers who approach problems with a questioning attitude, ask penetrating questions, and discuss alternatives open-mindedly, will likely make more enlightened decisions, than their colleagues who are not as flexible.

In-depth analysis of programs should be available to the decision-maker in some cases. In carrying out in-depth studies, the analyst relies on analytical tools derived from such disciplines as mathematics, economics, engineering, and computer science.

²⁸Hatry & Cotton, op. cit., p. 25.

These studies are often referred to in PPBS, as cost-effectiveness and benefit-cost analysis. In an in-depth study the same questions are answered as in the less rigorous one though they are answered more accurately and usually with a greater degree of certainty. It must be stressed that even with these techniques easy answers will not always be found; however, it is argued that if the process only provides more relevant information to the decision-maker concerning the ramifications of the various alternatives it will serve a useful function.

The criteria used to evaluate the alternatives may differ for various programs. Some of the basic classes of evaluation criteria are:

- (1) Volume indicators which measure quantity of output of each program.
- (2) Performance indicators which measure efficiency of each program.
- (3) Effectiveness indicators which measure the success of a program relative to its stated objective.
- (4) Benefit measurement which calculates direct and indirect benefits.
- (5) Cost measurement which calculates all resources used.²⁹

The success of the PPB System in assisting the decision-maker in efficient use of resources depends on the ability of analysts to consider economic and social costs and benefits of program alternatives. Yet the measurement process should not

²⁹ Ontario, Treasury Board, op. cit., pp. 25-28.

become an end in itself, since all decision-making includes elements which are intangible or unmeasurable. Nevertheless, even where a high degree of accuracy is not feasible, the discipline of carrying out the analysis in a systematic way, using a scientific method will provide the policy-maker with valuable insights, thus assisting him in making his decision.

The Multi-Year Program and Financial Plan

This plan consists of two parts:

- (1) The multi-year financial plan which sets forth the estimated funds required for each program.
- (2) The multi-year "output" plan which displays the expected products from each program.³⁰

The scope of the plan can vary; however, a five-year projection along with the current year has been the procedure instituted by several governments. The "prior" years expenditures may be used for reference purposes. As the number of years of projection increases, the accuracy of the estimates can be expected to decrease.

The financial plan should include all costs; such as operating, capital outlay, research, and development, which are associated with each program category.³¹

³⁰United States, George Washington University, State-Local Finances Project, PPB Note 6, p. 4.

³¹United States, Bureau of the Budget, Bulletin No. 66-3, (October 12, 1965), p. 6.

The multi-year "output" plan indicates the expected accomplishments of each program. In some programs the outputs are evident, while in others the selection of the output is difficult. In any case the objectives and performance of each program should be described in as specific and concrete terms as possible.³²

In the traditional budgeting process, planning has tended to be a separate function from budgeting. Schick suggests that the two processes have been divided because:

. . . the planners have been mobilizers of public resources; their mission is to assemble a [program] to create some future state of affairs. Budgeters have been rationers of public resources; their role is to curb the demand for public funds.³³

The multi-year plan brings together the financial aspects of programs, and the planning aspects, producing an integrated plan.

The plan also extends the time-horizon of the budgetary process. This provides the decision-maker with a picture of total program costs, time-phased; and future implications of current decisions. Thus a better perspective of total program costs and outputs is provided.

The program analysis stage of PPBS uses several techniques in evaluating programs. Two of the most commonly used will be discussed in the following chapter.

³²Ibid., p. 6.

³³Allen Schick, PPBS First Years: Premature and Maturing, The Brookings Institution, (September, 1968), p. 21. (Mimeographed)

CHAPTER IV

BENEFIT-COST AND COST-EFFECTIVENESS ANALYSIS IN PLANNING-PROGRAMMING-BUDGETING

In Chapter III the theoretical framework of the Planning-Programming-Budgeting System was reviewed. It was explicitly expressed that the integral part of the system was the analysis of the programs and consideration of the alternatives. To carry out this evaluation process, the decision-maker must have a means of ranking the programs according to economic and social costs and benefits. This ranking process is relatively easy for some projects, and is more difficult for others. The tools used to rank are benefit-cost analysis and cost-effectiveness analysis.¹

Historical Development

Benefit-cost analysis was applied to the public sector in the area of water resources and flood control in the United States during the late 1920's and early 1930's. The United States Flood Control Act of 1936 authorized the Corp of Engineers and the Department of Agriculture to estimate benefits and costs of various programs involving water resources. This act also established:

¹Several authors refer to this analytical process as "systems analysis." This phrase has become very fashionable in many disciplines; however, before it is used the system under study should be clearly delineated since it may be a system of physical science, social science, et cetera. Due to the possible confusion which can result with its use, the phrase will not be used in this discussion.

. . . the principle of comparing benefits to whomsoever they may accrue with the estimated costs.²

Benefit-cost analysis has continued to be applied by government departments to various projects. Improvements in its application have been accomplished; however, research is still required in the measurement of many program outputs.³

In Canada the concept was initially applied to the water resources field and in 1965 a manual was released which discussed this application.^{4,5}

Cost-effectiveness analysis is a relatively new development compared to benefit-cost analysis. Its development came about in 1947 as a result of defense research by the United States Rand Corporation;⁶ since then it has been applied extensively to several fields of government in the United States.

²Roland N. McKean, Efficiency in Government Through Systems Analysis, (John Wiley & Sons, 1958), p. 19.

³The United States Inter-Agency Committee on Water Resources Report, known as "The Green Book" outlines some of the uses of benefit-cost analysis in the Federal Government.

⁴Benefit-cost analysis was used by the Royal Commission on the South Saskatchewan River Project, 1952 and the Royal Commission (Manitoba) on Flood Cost Benefit, 1958.

⁵Sewell; Davis; Scott; and Ross, Guide to Benefit-Cost Analysis, (Queen's Printer, 1965).

⁶Thomas A. Goldman, Cost-Effectiveness Analysis (Frederick A. Praeger, 1967), p. v.

Benefit-Cost Analysis

Theoretical Framework

Benefit-cost analysis provides a framework for decision-making in the selection and evaluation of various choices. It is a process by which both the inputs into the system and the outputs from the system are given dollar valuations. (Unmeasurable items may be considered subjectively.) Since the inputs and outputs are measured with a common denominator, benefit-cost analysis becomes a method for recommending policy decisions. It does not eliminate the social and political factors which may be involved in a decision; however, it attempts to provide explicit information which will facilitate enlightened decisions. An important process of benefit-cost analysis is to determine whether the benefits are greater than, equal to, or less than the costs. In a ratio format, this becomes greater than, equal to, or less than unity.

One author states:

Benefit-cost analysis . . . provides us with a comprehensive method whereby the right questions may be asked and answers produced in such a way as to provide the means for more intelligent decision-making.⁷

The aim of benefit-cost analysis is to maximize "the present value of all benefits less that of all costs, subject to

⁷Sewell, op. cit., p. 1.

specified restraints."⁸ Costs are considered for the lifetime of the project; or as far into the future as possible. A comprehensive approach to costs is taken by including indirect consequences such as externalities, side-effects, and spillovers. Benefit-cost analysis implies that all relevant costs and benefits will be isolated, considered and evaluated.

An argument can be made that costs and benefits cannot be evaluated; yet whether it is done implicitly or explicitly, the process is always carried out. Sometimes value decides choice, and in other cases choice decides value. Every decision made in the public or private sectors involve the weighing of costs and benefits. A decision to spend an additional one million dollars for a highway overpass which will avert twenty deaths during the lifetime of the highway implies that saving a life is worth fifty thousand dollars. A negative decision in the same case implies that the twenty lives saved are not worth the additional one million dollars.

Harold Hovey suggests:

[that] all decisions society makes [remembering that a decision to change nothing is itself a decision] give rise to inferences of the monetary value associated with a given output. If a decision-maker does not know the implicit valuations he is making he is uninformed. If he is not prepared to accept the logical inference from his decision, he is deciding irrationally.⁹

⁸A.R. Prest & R. Turvey, "Cost-Benefit Analysis: A Survey," The Economic Journal, Vol. LXXV, (Dec. 1965), p. 686.

⁹Harold Hovey, The Planning-Programming-Budgeting Approach to Government Decision-Making, (Frederick A. Praeger, Publisher, 1968), p. 57.

Thus it would appear not to be purely a question of evaluation, but rather a question of evaluation reliability, and accuracy. Since costs and benefits will be evaluated implicitly or explicitly, emphasis should be placed on making the process more explicit and consistent by identifying the costs and benefits and making a decision in the realm of knowledge rather than ignorance. If the decision is based on ignorance it will be helpful to at least recognize this fact.

To accomplish this task the analyst must know what to consider as costs and benefits and how to deal with each.

Benefits

A benefit may be defined as anything resulting from the given activity which is favorable. Freeman states that a benefit is:

A government produced economic good, where good is defined broadly to include all things tangible and intangible which individuals desire.¹⁰

Another author describes a benefit as:

An advantageous effect. . . [which] represents real values resulting from any action which brings about increases in the output of useful goods and services.¹¹

¹⁰A. Myrick Freeman, "Project Design and Evaluation with Multiple Objectives," in Robert H. Haveman & Julius Margolis (eds), Public Expenditure and Policy Analysis, (Markham Publishing Co., 1970), p. 348.

¹¹Sewell, op. cit., p. 5.

Benefits may be classified according to their nature and attributes. Sewell suggests the following three types:

- (1) Primary or direct;
- (2) Secondary or indirect;
- (3) Intangible.^{12,13}

A "primary or direct" benefit is defined as:

The value of the immediate products or services resulting from the measures for which project costs and associated costs were incurred.¹⁴

A second definition is:

The gains which accrue to those people who make use of the goods and services which can be provided by the program.¹⁵

A "secondary or indirect" benefit is defined as:

The values added over and above the value of the immediate products or services of the project as a result of activities stemming from or induced by the project.¹⁶

¹²Ibid., pp. 5-7.

¹³Roland McKean, op. cit., pp. 134-167; Prest & Turvey, op. cit., pp. 683-690; and G. David Quirin, The Capital Expenditure Decision, (Richard D. Irwin, 1967), pp. 161-171, generally agree with this classification used by Sewell. Freeman, op. cit., pp. 348-350 classifies benefits somewhat differently as "marketed benefits" and "not marketed benefits." Arthur Mass, "Benefit-Cost Analysis: Its Relevance to Public Investment Decisions," in Fremont J. Lyden & Ernest G. Miller (eds), Planning Programming Budgeting, (Markham Publishers 1970), p. 224 argues that there is no such thing as a secondary benefit.

¹⁴McKean, op. cit., p. 151.

¹⁵Sewell, op. cit., p. 5.

¹⁶McKean, op. cit., p. 151.

An "intangible" benefit is:

A service not usually bought or sold at a price or at a fee, nor can its value be derived indirectly from the price of secondary products produced by using this service.¹⁷

Intangible benefits may be of a direct or indirect nature. They are not the same as "unmeasurable" which refers to the inability to quantify in monetary terms.¹⁸

Intangible benefits may also include externalities. These accrue to people other than the ones directly involved by the program. Some effects may be external economies while others are external diseconomies.¹⁹

Costs

A cost is a negative benefit, or a benefit foregone. It is an unfavorable result from a given activity. To increase a benefit, another benefit is foregone (cost).

Costs can be classified in the same way as benefits. A "primary or direct" cost consists of:

The goods and services which must be surrendered in order to construct and operate a given project (or program).²⁰

¹⁷Sewell, op. cit., p. 6.

¹⁸Ibid., p. 6.

¹⁹McKean, op. cit., pp. 134-150, refers to these externalities as "spillover" effects and discusses a distinction between technological spillovers and pecuniary spillovers. Technological spillovers alter the physical output of others, while pecuniary spillovers affect others financially.

²⁰Sewell, op. cit., p. 6.

The same author suggests a sub-division of primary costs, called "associated" costs. These are the costs incurred by the main beneficiaries and which must be made to reap the benefits of the program.²¹ These may be in the private sector as costs incurred to avail themselves of the public program.

A "secondary or indirect" cost is: "a cost involved in the production of a secondary benefit."²²

The intangible costs are those values which are not priced in the market. They may also be referred to as externalities, spillovers, or external diseconomies. Some intangible costs (such as loss of a scenic park, stigma of a certain disease)²³ are unquantifiable while others can be quantified but it is difficult to place a value on them (such as a reduction in mortality rate).

General Criteria of an Analysis

(1) Specification of an objective.

The initial step in a benefit-cost analysis is to set out the objective or end which is to be met. The various means of

²¹Ibid., p. 6.

²²Ibid., p. 6.

²³Herbert D. Klarman, "Syphilis Control Programs," in Robert Dorfman (ed), Measuring Benefits of Government Investments, (The Brookings Institution, 1965), pp. 367-409, measured in dollars the stigma associated with syphilis. However, this is a risky task and should be avoided unless the analyst can justify the data.

attaining an end cannot be effectively evaluated if the end is vague or unknown. The analysis must specify what benefits are to be maximized.

In a Planning-Programming-Budgeting System this process may have been carried out prior to the program analysis stage. In such instances the objective may have to be refined by explicitly stating the benefit or benefits to be maximized.

(2) Enumeration of benefits and costs.

The decision as to the extent of tracing costs and benefits for inclusion in an analysis is not easy and there is no rule which applies to all cases. The judgement of the analyst is required as to what is relevant and feasible.

For programs which are similar in size, technology and in the type of services provided, it may be possible to include only primary benefits and costs; however, where the programs under comparison have significantly different characteristics, indirect and intangible effects may have to be included. The analyst may consider the ratios of the alternatives using only primary units; then primary plus secondary, and evaluate their differences. If the differences are significant based on quantifiable data, the intangible items may be excluded. If the ratios are close then it may be necessary to list the intangibles so that the decision-maker is aware of them.

The extent to which externalities are to be included is

also a difficult decision. Most programs will have repercussions beyond the immediate function or area. Few programs operate in total isolation; therefore, a benefit (cost) to "A" may be a cost (benefit) to "B". These spillovers may be included, depending on the nature of the analysis and their significance on the ultimate decision-making process.

(3) Measurement of benefits and costs.

Ideally all benefits and costs are measured in dollars and the program alternative which offers the maximum net benefit in absolute terms is the program of first choice; however, there are several difficulties in accomplishing this task.

First, the dollar today is not equal to the dollar next year. Second, the problem of benefit "value" is difficult to answer. Third, the evaluation of the intangible units is difficult or impossible.

The general principle in benefit-cost analysis is to measure benefits and costs on the same basis. This is usually the price level prevailing at the present time.²⁴ Market prices, if available, are used to value the benefits and costs of a program. In the public sector the cost side may be more easily measured than the benefit side, since many benefits are in the form of social benefits and do not come under the test of the market place.

²⁴Prest & Turvey, op. cit., p. 691.

In the health field benefits may be measured by the use of "proxys" which may represent output -- for example, patient-days in a hospital; however, hospitals are not operated to maximize patient-days (or shouldn't be). Rather, they should maximize the social benefits resulting from patient-days.

Other benefits may be evaluated by measuring the costs prevented. In the health field these may include hospital and medical care costs. A reduction in mortality rate may be measured as a benefit to society by measuring the life-time earnings of a person. Loss of such earnings may represent the loss to society.²⁵

Intangible benefits and costs may be measured in units other than dollars or they may be completely unmeasurable.²⁶ In these cases they may be listed and considered subjectively by the decision-maker.

Given the problem of quantifying benefits and costs, the analyst should not attempt the impossible. One of the dangers of

²⁵For a more detailed discussion on measurement of benefits from health programs and human investment generally, see the following references: Burton W. Weisbrod, Economics of Public Health, (University of Pennsylvania Press, 1961); U.S. Department of Health, Education, and Welfare, Estimating the Cost of Illness, Health Economics Series No. 6 (May 1966); S.J. Mushkin and Francis d'A. Collings, "Economic Costs of Disease and Injury," Public Health Reports, Vol. LXXIV, No. 9, (Sept. 1959), pp. 795-809; S.J. Mushkin, "Health as an Investment," Journal of Political Economy, Vol. LXX, Part 2, Supplement (Oct. 1962), pp. 129-157; H.E. Klarman, "Syphilis Control Programs," op. cit., pp. 367-409; S.J. Axelrod (ed), The Economics of Health and Medical Care, (Ann Arbor, The University of Michigan, 1964), pp. 257-308.

²⁶Freeman, op. cit., p. 351.

a benefit-cost analysis is its execution when an over-enthusiastic analyst attempts to quantify the impossible or place too much emphasis on the quantifiable variables.

(4) Consideration of time-horizon and discount rate.

Benefits and costs do not occur concurrently. Costs may be relatively high during the first part of a program until the benefits start accruing. The program's life may extend over several decades; therefore, techniques must be available so that the cost-stream and the benefit-stream can be translated into a common base to facilitate reliable comparisons.

This common base is usually calculated by adjusting the costs and benefits to "present value." This reflects the future value of dollars if invested today. Thus the future value of a benefit or cost is what you would have to invest today with the current interest rate, to equal that benefit or cost in the future.

Choosing the correct discount rate is very important and also somewhat difficult. Sewell suggests that the discount rate should be at least:

- (1) as high as the borrowing rate in the money market, or
- (2) as high as the present yield on other investments by the same organization.²⁷

The first condition may reflect a higher interest rate in

²⁷Sewell, op. cit., p. 16.

the private sector due to risk and uncertainty and may not be applicable to the public sector. The second condition which is really "opportunity cost" may be extremely difficult to measure for a public program.

Due to the difficulties in choosing the correct discount rate, an analysis may have to be carried out using several rates. If the ranking of the programs is clear the discount rate may not have a significant influence; however, if the ranking is not clear a close analysis of the opportunity costs and justification of the discount rate will definitely be required.

(5) Recognition of the relevant constraints.

Certain constraints are relevant to an analysis and should be considered in each analysis. The various types of constraints have been enumerated by several authors.²⁸ They are:

- (a) Physical constraints regarding technology and production functions.
- (b) Legal constraints relating to changes necessary in the law or the maneuvering within the legal framework, to achieve a goal.
- (c) Administrative constraints in setting up the administrative machinery necessary for the task.

²⁸For a detailed discussion on this subject refer to: Otto Eckstein, "A Survey of the Theory of Public Expenditure Criteria," in James Buchanan (ed), Public Finances: Needs, Sources and Utilization, (Princeton University Press, 1961); Hendrichs and Taylor, Program Budgeting and Benefit-Cost Analysis, (Goodyear Publishers, 1969), p. 14; and, Prest & Turvey, "Cost Benefit Analysis, A Survey," The Economic Journal, Vol. LXXV, (Dec. 1965), pp. 683-735.

- (d) Distributional and political constraints relating to distribution of monies; and social factors affecting the decisions.
- (e) Budgetary constraints in limiting the resources available for any project.

Limitations of Benefit-Cost Analysis

Benefit-cost analysis is limited to application within a given framework which must be established in advance. The establishment of this framework may involve many value judgements of a social and political nature. The application of this theory is also limited to relatively narrow fields of decision-making and as the problem narrows and becomes more specific, the application usually becomes less difficult. This is the reason that this technique has not been used with more success in decisions regarding allocation between two large government departments. It is not possible to evaluate and compare the benefits resulting from an additional increment of money going into defense or into health. These decisions still require the judgement of the politician based on social and political variables. To date, no common denominator has been developed for use in a large-scale comparison of this nature.

This leaves the theory to application within a narrower field where the objective is somewhat more explicit. Within the health field valuable insight can be gained from an analysis of programs since they are narrower in scope and aimed at similar objectives. Analysis does not eliminate the need for judgement

but it does provide relevant data and through the process of asking questions and insisting on justification of actions, more informed decisions can be made. The process narrows the field of implicit decision-making.

Needless to say there are still many problems in the execution of a benefit-cost analysis, and the measurement of costs and benefits; however, as one author expresses this problem:

The case for using cost-benefit analysis is strengthened, not weakened, if its limitations are openly recognized and indeed emphasized.²⁹

Cost-Effectiveness Analysis

Theoretical Framework

In benefit-cost analysis, both benefits and costs are considered, with the objective being to maximize benefits as well as minimize costs. It is assumed in this type of analysis that both sides can be measured and considered separately in the analysis.

In cost-effectiveness analysis³⁰ the approach is to consider either costs or benefits, but not both. There are two principal approaches to this type of analysis:

- (1) Fixed utility approach or specified-effectiveness approach where the given objective is fixed and the analysis attempts

²⁹Prest & Turvey, op. cit., p. 731.

³⁰Also referred to as cost-utility analysis.

to determine the alternative which will meet this objective at the lowest economic cost.

- (2) Fixed budget approach where the economic resources level is fixed and the analysis attempts to determine the alternative likely to produce the highest level of utility for the given budget level.^{31,32}

The distinguishing feature of cost-effectiveness analysis is that either budget or objective is fixed while in benefit-cost analysis both are assumed to be flexible. Cost-effectiveness analysis is used when:

- (1) there is no market evaluation of alternative outputs, and
- (2) the resource inputs can be evaluated at market prices.³³

It is therefore useful when studying problems in the public sector where the outputs are not subject to market evaluation. In the health area an analysis may be carried out to determine the least-cost alternatives to reduce mortality from a disease by a specified number. The objective is provided while the costs must be attained for various means.

³¹Gene H. Fisher, "The Role of Cost-Utility Analysis in Program Budgeting," in Fremont J. Lyden & Ernest G. Miller (eds), Planning Programming Budgeting, (Markham Publishers, 1970), p. 188.

³²James D. McCullough, "Estimating Systems Costs," in Thomas A. Goldman (ed), Cost-Effectiveness Analysis, (Frederick Praeger, Publishers, 1967), pp. 72-73.

³³William A. Niskanen, "Measures of Effectiveness," in Thomas A Goldman, Ibid., p. 18.

A unique problem in cost-effectiveness analysis is the definition and measurement of units of effectiveness. The measure of effectiveness should be relevant and measurable. In some cases where this is impossible the analyst may select "proxy" measures. When this is done, care must be taken to insure that the wrong objective is not being fulfilled, and that the "means" does not become the "end." In a hospital, if patient-days are being used as a "proxy" for output, the measure of effectiveness may not be valid if patient-days are maximized at the expense of patient care. The analysis in this case should be concerned with providing a given number of patient-days at the least cost, at a given level of quality. Contrary to benefit-cost analysis, cost-effectiveness analysis does not attempt to quantify the benefits resulting from the patient-days of care.

Cost-effectiveness analysis is an important technique in the program analysis stage of PPBS. It is a technique which can be applied to problems which do not lend themselves to a benefit-cost analysis. (Assuming in these cases that the benefits are greater than the costs.)

Benefit-cost analysis and cost-effectiveness analysis are techniques which systematically examine and compare alternative courses of action that are feasible to achieve an objective. The discipline involved in carrying out either type, brings to light additional alternatives and the relative merits of each. Neither of these techniques make the decision, they only provide information

and make explicit factors affecting the problem which in turn sharpens the judgement of the decision-maker. The identification of alternatives and clarification of their implications is information which will greatly assist the decision-maker in making rational, effective and efficient choices. There are limitations in the application of these concepts but this does not decrease their usefulness if applied with discretion and with the knowledge of the limitations.

CHAPTER V

PLANNING-PROGRAMMING-BUDGETING IN HEALTH SERVICES

In the preceding chapters the traditional budgeting system, the Planning-Programming-Budgeting System, and the program analytical techniques were examined. In this chapter, the present budget formats will be examined and a program structure will be suggested for a provincial department of health and a general acute hospital. It must be emphasized that a program structure cannot be constructed without an in-depth study of an organization to ascertain its objectives and outputs. It is conceded that many different structures are possible within the same organization; however, the purpose of this investigation is to stimulate discussion and thought as to the potential functions and dysfunctions of a PPB System in the health services area.

Department of Public Health¹

Existing Budget Format

The traditional budgeting system within departments of the Provincial Government is based on inputs or line-item expenditures.

¹May be called Department of Health in some provinces or Department of Health and Social Development, it includes the functions traditionally the responsibility of the Department of Welfare.

The system illustrates how much money is to be spent on each item. It is primarily a tool for control and limitation of expenditure with the foremost criteria of not exceeding the budgeted amount. This form of control does not ensure effectiveness or efficiency since a department may be very efficient, yet never achieve its objective. The converse proposition is also true, a department may achieve its objective and still be inefficient.

Table I illustrates the expenditures for an organizational unit within the Department of Public Health, Province of Saskatchewan. This unit underspent the budget in the year in question and would appear to be efficient; however, there is no proof that the unit achieved its objective at the least cost.

TABLE I
OCCUPATIONAL HEALTH DEPARTMENT

ESTIMATE: \$56,430.00	EXPENDITURE: \$51,807.03
Branch Head--Salary	\$18,747.00
Permanent Positions--Salaries	20,877.07
Temporary Positions--Salaries	1,704.43
Casual Labor	202.91
Rents, Insurance & Utility Services	520.80
Travel, Sustenance & Vehicle Expense	3,624.46
Postage and Communications	675.32
Freight, Express	205.26
Contractual Services	662.08
Stationery & Office Supplies	185.59
Scientific & Educational Supplies	276.08
Medical & Hospital Supplies	1,445.93
Taxes & Licenses	130.33
Educational & Scientific Equipment	2,205.20
Transfer of Expenditure from NHG	131.07
Sundry	214.50
	<u>\$51,807.03</u>

Source: Saskatchewan, Public Accounts, 1969, p. 246)

There are several questions which could be raised by a decision-maker studying this unit's expenditure:

- (1) What is the objective of the department?
- (2) What is the output of the department?
- (3) What are the measures of effectiveness?
- (4) What are the benefits from these expenditures?
- (5) What are the alternative ways of meeting the objectives?

Budgeting by Program

The procedure of organizational budgeting and line-item appropriation makes it difficult to see how many resources were used for a given objective. Implicit objectives may be met by resource consumption by several organizational units or departments. If "Prevention of Disease and Illness" was selected as a primary objective of the health department it is feasible that several units were contributing to its fulfillment. For example: Cancer Commission, Venereal Disease Control, Child and Maternal Health, Mental Health and Occupational Health. The achievement of this objective may even extend outside the Department of Public Health to agencies such as Saskatchewan Water Resources Commission who are concerned with water pollution.

For budgeting and planning by objective a program format must be constructed. Prior to this format, however, the broad goals of the Department of Public Health must be agreed upon.

The following is an illustration of one possible program

structure:

- I. Prevention and Control of Disease. To minimize and control the incidence of disease and illness.
- II. Treatment and Rehabilitation. To restore ill and disabled people to optimum level of health and well-being.
- III. Long-term Care. To maintain and support ill and disabled people who are not capable of personal self-sufficiency.
- IV. Health Research. To minimize incidence and severity of disease and illness by increasing the knowledge about causes, cures, and means of prevention and amelioration.
- V. Training of Health Personnel. To minimize the incidence and severity of disease and illness by development of manpower resources for the conduct of health improvement programs.

If these major programs were accepted, the monies used to meet their objectives by all organizational units would be included under the respective program. In such a comprehensive approach, the programs would cut across department boundaries and not necessarily be restricted within the Department of Public Health.

Sub-programs, sub-sub-programs and program elements could be designed for each major program. Examples of sub-programs may be the following:

- I. Prevention and Control of Disease and Illness
 - (a) Communicable Disease
 - (b) Mental Illness
 - (c) Chronic Disease
 - (d) Occupational Hazards
 - (e) Environmental Hazards

II. Treatment and Rehabilitation

- (a) Mental Illness
- (b) Physical Rehabilitation
- (c) Chronic Disease
- (d) Acute Disease and Illness

III. Long-term Care

- (a) Mental Illness
- (b) Chronic Disease
- (c) Geriatrics
- (d) Physical Disabilities

IV. Health Research

- (a) Mental Disease
- (b) Chronic Disease
- (c) Physical Disability
- (d) Acute Disease

V. Training of Health Personnel

- (a) Physicians
- (b) Nurses, Technicians, Orderlies
- (c) Social Workers, Dietitians
- (d) Administrators

The program structure listed above is primarily by disease entity; however, a structure could be used in which the programs represent:

- (1) The type of delivery system used or the type of service, i.e., hospitals, nursing homes.
- (2) The agency responsible, i.e., Department of Welfare, Department of Health.
- (3) The major beneficiary groups, i.e., children, aged, Veterans.

If a program budget format was adopted it may or may not require organizational changes; however, each organizational unit's contribution would have to be explicitly identified. The line-item

budgeting would not come to a sudden end either. It would be required at the lower level of the program hierarchy for cost accounting and control. The program budget should be used by the decision-makers who cannot make rational choices from the data provided by line-item budgets. The process of translating the line-item budget into the program format is referred to as a "crosswalk operation." Allocation formulas must be developed so that the line items can be allocated to the programs as accurately as possible.²

The next important phase of a Planning-Programming-Budgeting System is the program analysis. This involves the analysis of all the alternatives available to reach the objectives. This analysis may involve benefit-cost analysis, or cost-effectiveness analysis. The analytical process as well as the structural outline of the programs can be used to determine:

- (1) Program Validity -- Does each activity contribute to the objectives of the department?
- (2) Program Strategy -- Does each activity represent the optimum among the set of alternative approaches in achieving the objective?
- (3) Program Duplication -- Does any duplication of effort exist among different activities and programs?
- (4) Program Conflict -- Is any activity or program undermining or compromising the effectiveness of another program?
- (5) Program Gaps -- Are there any significant gaps between programs which adversely affect the achievement of broader department objectives?

²Refer to Chapter III, footnote number 22, Page 31.

- (6) Program Imbalance -- Is the relative emphasis and allocation of resources among programs in proper balance with current department objectives?
- (7) Program Substitution -- Are there any programs of diminishing need and priority which could be eliminated to provide resources for new and higher priority programs?³

The use of the analytical tools available would demonstrate whether the basic objectives could be met by shifting from a process with high unit costs to a process with low unit costs. For example: the use of outpatient clinics to treat illnesses rather than hospitals.

For each program a multi-year program and financial plan would be established listing the costs and benefits or outputs for a five-year period. This would allow the decision-maker to see the long-term effects of new programs and marginal increases in present programs.

While there are inherent weaknesses in every program structure, it does provide a guideline as to the achievements from expenditure of resources. The explicit objectives provide benchmarks against which efficiency and effectiveness can be measured. The process stimulates short and long-term planning and the evaluation of programs in terms of their relative socio-economic costs and benefits.

³E. Petrick, Planning by Objective, (Province of Manitoba), Planning and Priorities Committee of Cabinet Secretariat, December 11, 1969), pp. 4-5. (Mimeographed)

Hospitals and Planning-Programming-Budgeting

Existing Budget Structure

The following is a typical hospital budget format of a large general acute hospital used by senior management for decision-making.

TABLE II

ABC HOSPITAL PROPOSED 1971 BUDGET
TOTAL OPERATING EXPENSES

	Total 1971 Budget	Salaries	Medical and Surgical Supplies	Drugs	Other Supplies and Expenses
Nursing Administration					
Nursing Units A					
B					
C					
Emergency					
Outpatient Clinic					
Total Direct Care of Patients					
Operating Room					
Central Service					
Intravenous Therapy					
Delivery Room					
Pharmacy					
Laboratory					
Radiology					
Physical Medicine and Rehabilitation					
Physiotherapy					
Occupational Therapy					
Total Special Services to Patients					
Medical Records					
Medical Social Services					
Hospital Library					
Total Supplemental Services to Patients					

[FIGURES OMITTED]

. . . continued

TABLE II -- Continued

	Total 1971 Budget	Salaries	Medical and Surgical Supplies	Drugs	Other Supplies and Expenses
Administration					
Employee Benefits					
Health Services					
Total General Admin- istration					
Dietetics					
Laundry					
Housekeeping					
Operation of Physical Plant					
Maintenance of Physical Plant					
Total General Services					
Education					
Nursing					
Medical					
Other					
Total Hospital					

[FIGURES OMITTED]

The hospital budget shows line-item expenditures, and does not illustrate why the expenditures are being made. As in the case of the Department of Health, a program structure can be developed for a hospital so that the decision-makers know the purposes of the expenditures.

This program budget should complement the structure established for the Department of Health so that the programs are common for comparative analysis.

In the program structure of the Department of Health, hospitals would primarily contribute to Program II: Active Treatment

of Patients with Disease and Illness. Although there may also be expenditures which fall under Education, and Research.

To illustrate the concept of a program structure in a hospital, the following is suggested as one alternative:

- I. Active Treatment
 - (a) Acute Disease & Illness
 - (1) Medical
 - i) Urological
 - ii) Cardiovascular
 - iii) General
 - (2) Surgical
 - i) Urological
 - ii) Cardiovascular
 - iii) General
 - (3) Obstetrical
 - i) Prenatal & Postpartum
 - ii) Delivery
- II. Health Research
 - (a) Acute Disease Entities
 - (1) Cardiovascular
- III. Training of Health Personnel
 - (a) Physicians
 - (b) Nurses
- IV. Support
 - (a) Administrative
 - (1) Executive Management
 - (2) Personnel

The major program, I. Active Treatment, may also be divided into the following sub programs:

- (a) Acute Disease
 - (1) In-patient
 - (2) Out-patient
 - (3) Emergency

as well as:

- (a) Acute Disease
 - (1) Medical
 - i) Diagnostic
 - ii) Therapeutic
 - iii) Convalescent
 - (2) Surgical
 - i) Pre-operative Care
 - ii) Surgical Operations
 - iii) Post-operative Care

The use of a program structure would facilitate program analysis. This would demonstrate the relative costs and benefits of allocating more or less resources to a particular program. Rather than granting approval for a capital investment in a new piece of equipment or expanding the costs of a program by bargaining in emotionally charged terms, such as "need" or "patient care," each request would have to demonstrate its relative value. The benefits may not always be possible to measure in terms of dollars so other measurements will have to be established. Some benefits may be quantified by measuring the number of lives saved or the reduction in morbidity, length of hospital stay, et cetera. In many cases "proxys" will have to be developed as measures of effectiveness. Although this is not entirely satisfactory, the discipline involved in doing an in-depth analysis will undoubtedly provide

information that will assist the decision-maker.

The multi-year program and financial plan which would be a principal product of the program structure and program analysis would set out the costs and outputs of the various programs for a stated time period. This plan would show future consequences of today's decisions which hopefully would contribute to more rational planning on behalf of hospital boards and government agencies.

The program structures set forth in this chapter are for illustrative purposes only and are not intended to be complete or comprehensive. Each individual department of health and hospital would have to specify their primary objectives of their activities and based upon this information, construct a suitable program structure.

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CHAPTER VI

SUMMARY, OBSERVATIONS, AND CONCLUSIONS

Summary

The traditional budget and budgetary process have serious limitations as effective management aids in allocating relatively scarce resources among competing demands. On the other hand, there are functional aspects as well as limitations of the Planning-Programming-Budgeting System. The following discussion will cover these aspects and list some selected observations.

Limitations of the "Traditional" Budget

The traditional budget and budgetary process function primarily as expenditure controls. The budget is weak in the planning and management functions, as it does not provide for the examination of alternatives. It presents requests in the form of inputs which list "what" the money is to be spent on, but fails to answer the important question of "why" the expenditure is to be made. It does not set forth the product, service, or benefit to be derived from the expenditure. The traditional budget projects costs for one year only, thus an inadequate picture is presented as to the total cost implications. This is synonymous with the individual who purchases a cadillac on consideration of the down-payment only, while ignoring the implications of the future payments. Measurements

and standards of effectiveness are not feasible with the present budget because outputs and objectives are ill-defined.

Functional Aspects of PPBS

The Planning-Programming-Budgeting System is intended as a tool for management rather than for controllers, by its stress on the outputs of a program rather than the inputs. Thus the structural aspects of the system are oriented toward explicitly defined objectives or goals. PPBS assists managers in making analytical decisions by stressing the systematic analysis of various alternatives for meeting the defined objective. It offers a framework through which analysis can be carried out by thoroughly examining costs, benefits and related consequences of alternative decisions. The process attempts to bring together the resource allocators and the planners by focusing on the overall purpose of the program. This can help by stimulating policy-makers to be "program" conscious and instilling an inquiring attitude into all decision-makers.

The process examines costs over an extended time horizon so that future consequences of present decisions will be considered. The process also facilitates periodic review and revision of present programs in light of their relative costs and benefits.

PPBS attempts to instill a philosophy in decision-makers that will help them to consider programs in relative terms, as well as in absolute terms.

Limitations and Problems of PPBS

There is no program structure which will be correct under all circumstances. The structure of the program will depend on the organization and the type of information sought.

Installing a PPB System requires change. As with any social change there are problems, resistance, and uncertainties which much be recognized and dealt with.

There are many problems associated with the identification of objectives, the formation of the program structure, and the evaluation of the program. Benefits from public programs, especially health programs, are extremely difficult to measure. In many cases the benefits may even be difficult to identify. Quantification of benefits may be misleading to the decision-maker if the quantification is carried out without recognizing the constraints and limitations. Placing too much emphasis on benefit-cost ratios may lead to organizational goal displacement by the department heads over-measuring benefits to justify their budget requests. This may also cause department heads to put forth only those programs which are easily quantified, thus omitting valuable programs whose benefits cannot be quantified.

There are social values and norms of society which must be recognized when applying PPBS. It may be a relatively poor use of resources from a purely economic viewpoint to cure an injury of an eighty-five year old person; however, social values may dictate that

this cure be given.

Organizational conflict may result from "cutting across" boundary lines or departmental lines, when the program structure is defined. This potential conflict may not always be unhealthy; nevertheless, it must be recognized.

Observations

(1) A necessary function of government officials and health service administrators is the allocation of relatively scarce resources among competing programs. The present budgetary system in the health sector allows this allocation process to be carried out in an aura of confusion, emotional arguments and a dearth of relevant information. The process is fragmented, incremental, irrational and prone to the dictates of pressure groups and minority interests. The present system may result in haphazard cut-backs of relatively beneficial programs by overzealous politicians. It may also result in expansion of less valuable programs to further the self-interests of health professionals rather than society.

(2) The present budgetary process consists of explicit and implicit bargaining characterized by two general polar approaches: the budget limitation approach and the needs/requirements approach.

(3) The present budgetary process in the health sector lacks explicitly defined objectives and allows duplication, gaps, and poor utilization among programs.

(4) A Planning-Programming-Budgeting System is not a panacea, as some authors seem to imply, to the resource allocation problem. It has serious limitations and problems in implementation and operation; however, it also has functional aspects.

(5) A Planning-Programming-Budgeting System would appear to be of assistance to decision-makers in analyzing the ramifications of various alternatives; for example:

- (a) Provision of out-patient care rather than in-patient care for certain illnesses.
- (b) Substitution of labor mix in hospitals.
- (c) Expansion of prevention services vis-a-vis curative services.

(6) A Planning-Programming-Budgeting System would not eliminate the bargaining process; however, it would force the bargainers to seek and use pertinent and factual data rather than emotionally charged terms.

(7) A Planning-Programming-Budgeting System will encourage long-term planning in a coordinated manner.

(8) A Planning-Programming-Budgeting System would be applicable within health services, particularly, if regionalization is carried out. It would allow the maximum social benefits to be offered to the region at the least cost.

(9) A Planning-Programming-Budgeting System would require an extensive educational program to assist public officials, elected

and appointed to understand and use it effectively.

Conclusions

This thesis has indicated that there are a number of problems associated with the present method of resource allocation in the health care sector. A number of observations have been made concerning the "traditional" budgetary process and the Planning-Programming-Budgeting System.

It is suggested that Planning-Programming-Budgeting is applicable to health services and should be gradually installed at the provincial, regional, and hospital levels to provide policy and decision-makers with the relevant information required to make rational choices.

This process could be implemented by making an initial research grant available to a hospital to support the analytical work necessary to develop a program structure, with corresponding objectives, alternatives, costs, and benefits for each program. When the system became functional, it could be coordinated with a regional program format and ultimately a provincial program structure.

While there are problems associated with a Planning-Programming-Budgeting System, it would appear to offer benefits exceeding those associated with the traditional budget, as a tool to assist policy-makers in making resource allocation decisions.

If recommendations resulting from the public inquiries into the cost of health care are introduced, it is suggested that they be incorporated within a framework of a Planning-Programming-Budgeting System. This would assist in the evaluation of present programs by providing the policy-makers with information regarding the relative costs and benefits of these programs and their alternatives.

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